

**To:** Kaplan, Robert[kaplan.robert@epa.gov]; "William Moritz (DNR)"[MoritzW@michigan.gov]; "Keith Creagh (DEQ)"[creaghk@michigan.gov]; "Hal Fitch (DEQ)"[fitchh@michigan.gov]; Casey, Steve (DEQ)[caseys@michigan.gov]; "Joe Maki (DEQ)"[makij3@michigan.gov]  
**From:** Alexandra Maxwell  
**Sent:** Mon 3/7/2016 9:33:58 PM  
**Subject:** Red Flag Review of Aquila Resources Back Forty Mining Application  
2016 02 CSP2 Comments on Aquila.pdf

Dear Mr. Maki, Mr. Casey, Mr. Sutton, Mr. Moritz, Mr. Creagh, and Mr. Fitch,

Attached please find a 'red-flag review of Aquila Resources' Back Forty Mining Permit Application Project ID: 14A021, conducted by Kendra Zamzow, Ph.D. and David Chambers, Ph.D, Professional Geophysicist of the Center for Science in Public Participation (CSPP).

Save the Wild U.P.'s goal in securing this external technical review is to ensure that Michigan Department of Environmental Quality staff and the Mine Permit Review Team assigned to this permit are made fully aware of critical flaws in Aquila's Mining Permit Application.

Key issues raised by CSPP's red flag review include: the serious risk of Acid Rock Drainage (ARD), significant underestimation of financial assurance, the lack of water treatment facility design in Aquila's application, and the erroneous comparison of closure plans to that of the Flambeau Mine – the Flambeau Mine had no tailings and left no waste rock on the surface. Also, detailed information concerning the alkaline amendment of tailings and the waste rock facility design was omitted from Aquila's application.

Dr. Zamzow's report makes the following specific recommendations and actions:

#### **Regarding Tailings & Waste Rock Management Facilities -**

- "A comparison of the costs of a dry stack (86% dewatered) and the proposed 81% dewatering should be provided."
- "Examples should be provided that indicate tailings that are 81% solids can be pumped in cold climates."
- "Proposed alkaline amendment strategies should be well-fleshed out at this stage, and details of the preferred method(s) provided, including geochemical reactions over time that could reduce the function of the drainage layer."
- "Monitoring wells need to be placed to ensure the tailings facility embankment is not contributing acid or metal leaching to groundwater."
- "An impermeable cap should be placed on the embankments at closure."

#### **Regarding Water Management -**

- "Ensure that water can be safely shunted between containment areas to be adequately contained during water treatment plant downtime, heavy precipitation, or rain on snow events."

#### **Regarding Water Treatment During Mining Operations -**

- “Ensure the costs of filtering wastewater and trucking waste solids material to a landfill and/or a hazardous waste landfill are accurately accounted for.”
- “The wastewater treatment plant should have already been designed in detail by this stage of permitting, including any wastewater pre-treatment at the tailings facility sump or prior to entering the plant.”
- Regarding Pit Backfill pH Recommendation - “Discuss how alkaline material will be introduced to the pit backfill after the pit has been capped and revegetated, if limestone is not adequate to consistently produce a neutral pH and precipitate metals.”

#### **Regarding Pit Backfill Metal Leaching Recommendation -**

- “Given the potential for antimony, selenium, and arsenic to mobilize under neutral conditions, monitoring will need to occur at the TWRMF leachate sumps and at monitoring wells on and around the backfilled pit until hydrology and chemistry have stabilized.”

#### **Regarding Water Treatment Post Closure: Recommendation -**

- “The TWRMF cap is designed to reduce infiltration, but given the extremely acidic nature of the material that will be enclosed, the cost of a WTP should be included in financial assurance for at least the 20 year post closure monitoring period.”
- “It would be prudent to include the cost of a WTP until the pit has flooded and monitoring wells on show that there is no seepage into groundwater or surface water, and that pit backfill water chemistry has stabilized.”

#### **Regarding Financial Assurance Recommendation -**

- “When reviewing the indirect and direct cost estimates for the Back Forty financial assurance, it is obvious that it has been significantly underestimated, especially with regard to the indirect cost calculations. At a minimum the indirect costs for the financial assurance at the Back Forty project should follow US Forest Service guidelines, and the direct costs should be reviewed by a qualified party to correct assumptions that underestimate the cost of reclamation that would need to be conducted by a regulatory agency.”

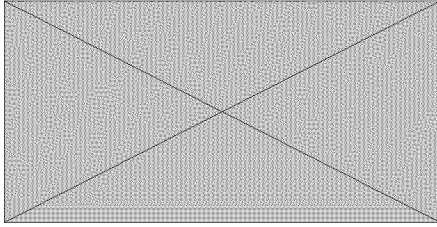
Additionally, serious red flag comments address Hydrology (upper weathered bedrock and concerns about the conductivity range), Surface Water Sampling: (“extremely minimal”, eight “snapshots” over several years, additional baseline chemistry needed), and Cyanide (“Aquila does not specifically say that they will sign the International Cyanide Management Code”).

Clearly, MDEQ cannot proceed with any permits for the Back Forty project unless all issues have been satisfactorily investigated and resolved.

Although the Public Comment period has closed, we ask that MDEQ staff accept this technical review. We request that all of the technical recommendations and questions raised in this report

by Center for Science in Public Participation be incorporated into the MDEQ's permit review process, and added to the Public Comment record for this permit application.

Sincerely,



Alexandra Maxwell, Save the Wild U.P. executive director

cc: Save the Wild U.P. Board, Save the Wild U.P. Advisory Board

Alexandra Maxwell  
Executive Director  
Save the Wild UP  
[grassroots@savethewildup.org](mailto:grassroots@savethewildup.org)  
906.662.9987

## **Save the Wild UP**

[savethewildup.org](http://savethewildup.org)

Follow us on Facebook: [SaveTheWildUP](https://www.facebook.com/SaveTheWildUP)

P.O. Box 562 Marquette MI 49855 | 1-906-662-9987 | [info@savethewildup.org](mailto:info@savethewildup.org)